# CLAIMS

What is claimed is:

1. A system that facilitates verifying and/or validating an APC assisted process *via* simulation, comprising:

a film stack representation; and

a canonical model that predicts process rates, the process rates predicted based at least in part upon an exposed material in the film stack representation.

2. The system of claim 1, the film stack representation comprising at least one layer.

3. The system of claim 2, the layer comprising at least one block, the at least one block defined by material type and size.

4. The system of claim 3, the film stack representation generated *via* associating blocks within a graphical user interface.

5. The system of claim 3, the film stack representation generated *via* associating blocks utilizing a defined grammar.

6. The system of claim 3, the material type and size being user-defined.

7. The system of claim 1, the film stack representation comprising at least one guarded process rate; the at least one process rate being associated with one or more blocks.

8. The system of claim 7, a precondition utilized as a guard for a predictive model based process rate.

9. The system of claim 1, the canonical model receiving a chamber state and predicting a process rate based at least in part upon parameters of the chamber state, the parameters including at least one of elapsed simulation time, process tool settings, exposed material, and semiconductor device characteristics.

10. The system of claim 9, one of the process tool settings being generated according to a distribution.

11. The system of claim 10, the distribution being user-defined.

12. The system of claim 10, the distribution obtained *via* a design of experiments.

13. The system of claim 9, device characteristic inputs being generated according to a distribution.

14. The system of claim 13, the distribution being user-defined.

15. The system of claim 13, the distribution obtained *via* a design of experiments.

16. The system of claim 1, further comprising a solver for generating recipe parameter recommendations according to at least one of inputs, outputs, goal(s) and constraint(s) of the canonical model.

17. The system of claim 16, a parameter recommended by the solver varied according to a distribution.

18. The system of claim 17, the distribution being user-defined.

19. The system of claim 17, the distribution obtained *via* a design of experiments.

20. The system of claim 17, the parameter generated by a pseudorandom variate generator.

21. The system of claim 1, further comprising a rendering component that facilitates display of the film stack representation as a process is simulated.

22. The system of claim 21, the rendering component facilitating display of at least one of inputs to the canonical model, outputs of the canonical model, parameters of a process chamber, simulation start time, elapsed simulation time, the film stack representation, and distribution of the inputs.

23. The system of claim 1, the canonical model comprising one or more of model variables, model constraints, and model goals.

24. The system of claim 23, the canonical model contemplating one of the model constraints and the model goals.

25. The system of claim 24, the canonical model predicting process rates in two dimensions.

26. The system of claim 24, the canonical model predicting process rates in three dimensions.

27. The system of claim 1, wherein a simulation speed can be customized by a user.

28. The system of claim 1, wherein a simulation can be halted by one of a user and a predefined interrupt.

29. The system of claim 1 comprised by a computer-readable storage medium.

30. A method for validating a semiconductor manufacturing process, comprising:

generating a film stack representation; and

providing a canonical model that predicts process rates for an exposed material in the film stack representation given a process step.

31. The method of claim 30, further comprising:

creating a chamber state, the chamber state comprising parameters associated with a process chamber; and

relaying the chamber state to the canonical model.

32. The method of claim 31, further comprising displaying the film stack representation as a process is simulated.

33. The method of claim 31, further comprising displaying chamber state parameters and associated outputs from the canonical model.

34. The method of claim 31, further comprising determining appropriate chamber parameters given current chamber parameters and a predicted process rate.

35. The method of claim 34, the determined chamber parameters varied according to a distribution.

36. The method of claim 35, the distribution being user-defined.

37. The method of claim 35, the distribution obtained *via* a design of experiments.

38. A system that facilitates verification of an APC assisted process comprising:

means for generating a film stack representation;

means for obtaining parameters relating to a process chamber at a particular point in time; and

means for predicting a process rate based at least in part upon the film stack representation and the parameters.

39. The system of claim 38, further comprising means for selecting a simulation time.

40. The system of claim 39, further comprising means for displaying a simulation of the predicted process as applied to the film stack representation.

41. A data packet that passes between at least two computer processes, comprising:

a canonical model that predicts process rates based at least in part upon parameters of a tool chamber, an exposed material, and a particular process step; and

a film stack representation that comprises a layer, the layer including a material utilized by the canonical model to predict a process rate.

42. A system that facilitates *in situ* monitoring of a semiconductor manufacturing process, comprising:

a process rate calculator that can calculate semiconductor manufacturing process rates based at least in part upon sensed parameters of a process chamber tool and time between receiving sensed parameters;

a film stack comprising a material;

a solver component that generates desirable parameters of the process chamber tool based at least in part upon the calculated process rate and the sensed parameters; and

a rendering component that displays the film stack as the film stack is processed.